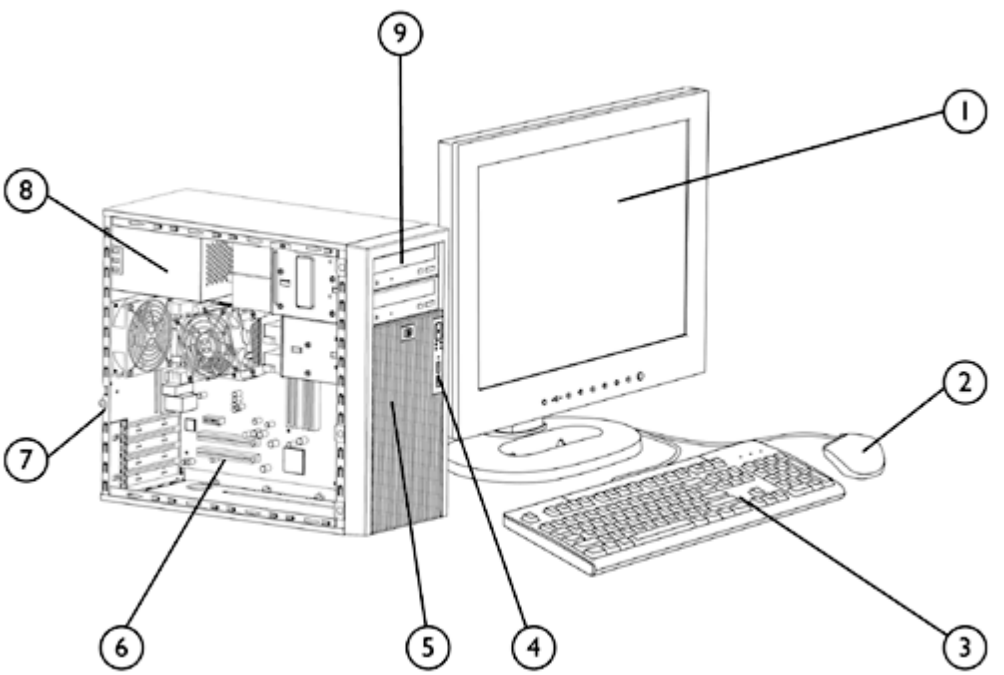
Overview

Microtower



1. Monitor (sold separately)
2. 2-Button Scroll Mouse
3. HP Standard Keyboard
4. 2 USB 2.0 ports
5. 2 internal 3.5" drive bays
6. 2 full-height PCI 2.3 slots, 1 PCI-E x1 slot
7. 4 USB 2.0 ports, 1 serial port, 1 parallel port, 2 PS/2, 1 RJ-45, 1 VGA, 1 audio in.1 audio out.1 MIC
8. 250-watt max power supply
9. 2 external 5.25" drive bays for optional optical or 3.5" floppy diskette drive

At A Glance

- Intel® Pentium 4 processors, Intel Celeron D processors
- Choice of operating systems:
  Microsoft Windows XP Home
  Microsoft Windows XP Professional
  FreeDOS
- Intel 915GV Express chipset
- Intel Graphics Media Accelerator 900
- PCI Express I/O bus
- Integrated SATA/150 controller
- Integrated Ultra ATA/100 controller
- Integrated Intel 10/100 Network Connection
- Choice of hard drives and optical drives
- Single or dual channel DDR2 SDRAM system memory
- Protected by HP Services. Terms and conditions vary by country. Certain restrictions & exclusions apply.

Available Technology and Features

Processor and Speed
One of the following

Intel Celeron D Processors:

Intel Celeron D 331 Processor
(2.66-GHz, 256-KB L2 cache, 533-MHz FSB)

Intel Celeron D 336 Processor
(2.80-GHz, 256-KB L2 cache, 533-MHz FSB)

Intel Celeron D 341 Processor
(2.93-GHz, 256-KB L2 cache, 533-MHz FSB)

Intel Celeron D 346 Processor
(3.06-GHz, 256-KB L2 cache, 533-MHz FSB)

Intel Celeron D 351 Processor
(3.20-GHz, 256-KB L2 cache, 533-MHz FSB)

Intel Pentium 4 Processors with Hyper-Threading Technology:

Intel Pentium 4 521 Processor
(2.80-GHz, 1-MB L2 cache, 800-MHz FSB)

Intel Pentium 4 630 Processor
(3.0-GHz, 2-MB L2 cache, 800-MHz FSB)

Intel Pentium 4 640 Processor
(3.20-GHz, 2-MB L2 cache, 800-MHz FSB)

Intel Pentium 4 650 Processor
(3.40-GHz, 2-MB L2 cache, 800-MHz FSB)

Operating Systems and Application Software

Microsoft Windows XP Home SP2

Microsoft Windows XP Professional SP2

Free DOS

Microsoft Office 2003 Basic (availability varies by region)
Microsoft Office 2003 Small Business (availability varies by region)
Microsoft Office 2003 Professional (availability varies by region)
Microsoft Works 7.0 (availability varies by region)

QuickBooks Simple Start Edition 2005 (availability varies by region)
Roxio DigitalMedia Plus (by SONIC)
Roxio CinePlayer
Dantz Retrospect Express 7
Altiris Local Recovery (availability varies by region)
Norton AntiVirus 2005 (availability varies by region)
Sun Java Runtime Environment (availability varies by region)

Hard Drives

40-GB Serial ATA 1.5-Gb/s Hard Drive (7200 rpm)

80-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)

160-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)

250-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)

NOTE: The Serial ATA interfaces in the HP Compaq dx2100 Microtower support data transfer rates up to 1.5 Gb/s.

Available Technology and Features

System Memory – Single Channel Configurations	256-MB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (1 x 256-MB) 512-MB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (1 x 512-MB) 1-GB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (1 x 1-GB)
System Memory – Dual Channel Configurations	512-MB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (2 x 256-MB) 1-GB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (2 x 512-MB) 2-GB DDR2 Synch DRAM PC2-4200 (533-MHz) Non-ECC (2 x 1-GB) NOTE: For best performance, memory speeds and sizes should not be mixed. See memory section for more information.
Storage – One or more of the following (see Storage section below)	Diskette Drive 1.44-MB Diskette Drive Optical Drives 48X CD-ROM drive 52X CD-ROM drive (available in APJ only) 48X/32X/48X CD-RW drive 16X/48X DVD-ROM drive 48X/32X Combo CD-RW/DVD-ROM Drive 16X DVD+/-RW LightScribe Drive (Double Layer/Dual Format)
Keyboard – One of the following	HP PS/2 Standard Keyboard HP USB Standard Keyboard
Mouse – One of the following	PS/2 2-Button Scroll Mouse USB 2-Button Optical Scroll Mouse USB 2-Button Scroll Mouse
Audio	Realtek ALC653 2-channel audio 3D audio compliant with AC'97 Rev. 2.3 Internal PC speaker
Communication	Integrated Intel PRO/100 Network Connection Broadcom NetXtreme Gigabit Ethernet PCI Express x1 Adapter Agere 56K PCI Modem
Graphics	Intel Graphics Media Accelerator 900

System Details

Base Unit

- Micro ATX microtower chassis, including power supply and front bezel
- Four (4) drive bays and three expansion slots
- Microsoft operating system CD
- Active type heatsink
- 92 x 92 x 25 mm chassis fan
- System board with Intel 915GV Express chipset, integrated Intel PRO 10/100 Network Connection, integrated graphics and audio, 2 PCI slots, 1 PCI Express x1 slot, 4 DDR2 DIMM memory slots
- (1) Parallel ATA data cable; 3-headed; supports two IDE drives
- (1) Serial ATA data cable
- Product documentation on CD
- HP system restore CD
- Power cord

Slots	PCI	Two (2) full-height PCI 2.3 slots on PCA One (1) full-height PCI Express x1 slot on PCA
	Memory Expansion	Four (4) DIMM slots
Bays	Internal	Two (2) 3.50" half-height
	External	Two (2) 5.25" half-height
USB Support	EHCI high-speed USB 2.0 controller Two (2) front ports; Four (4) rear ports	
Interfaces (Legacy)	One (1) parallel port One (1) serial port One (1) PS/2 keyboard port One (1) PS/2 mouse port One (1) analog VGA video port One (1) line in; one (1) line out; one (1) mic in One (1) RJ45 network port	
Weight & Dimensions	Chassis Dimensions (H x W x D)	14.37 x 6.89 x 16.43 in (36.5 x 17.5 x 41.73 cm)
	Packaged Dimensions (L x W x H)	21.91 x 19.72 x 15.84 in (55.65 x 50.09 x 40.23 cm)
	System Weight	21.67 lb (9.83 kg)
	Shipping Weight	29.39 lb (13.33 kg)

System Details

Supported Technology & Features	Memory Type	• PC2-4200 DDR2 SDRAM (533-MHz) non-ECC • Single or dual channel configurations • 4 GB maximum system memory (Above 3-GB, all memory may not be available due to system resource requirements.)
	Hard Drive Interfaces Supported	• Serial ATA 1.5-Gb/s and 3.0-Gb/s hard drives are supported • 915GV chipset limits throughput to 1.5 Gb/s
Intel Pentium 4 Processor with HT Technology	Coprocessor	Integrated
	CPU Socket Type/Number	Socket T LGA775 socket
	CPU Package	LGA775
	Front Side Bus Speed	533/800-MHz
	Cache Memory	1-MB L2 Advanced Transfer Cache (500 Series) 2-MB L2 Advanced Transfer Cache (600 Series)
Intel Celeron D Processor	Coprocessor	Integrated
	CPU Socket Type/Number	Socket T LGA775 socket
	CPU Package	LGA 775
	Front Side Bus Speed	533-MHz
	Cache Memory	256-KB L2 Advanced Transfer Cache
Chassis	Front Panel	• Power button • Power On LED • HDD Activity LED
	Cooling Solutions Supported	• Power Supply Fan (variable speed) • Aluminum active heatsink (variable speed) • Chassis fan (variable speed)
	Slots Supported	Three (3) full-height expansion slots
	Front I/O	Two (2) USB 2.0 ports
	Rear I/O	Standard Micro ATX I/O connectors, including four (4) USB 2.0 ports
	Drive Bays	• Two (2) 5-1/4" external • Two (2) 3-1/2" internal
	Internal Speaker	Standard
	Power Supply	250-watt ATX Power Supply – PFC/non-PFC with a 115v/230v line switch (varies by country/region)

System Details

Unit Environment and Operating Conditions

General Unit Operating Guidelines

- Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.
- Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.
- Never restrict airflow into the computer by blocking any vents or air intakes.
- Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.
- Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow.
- If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.

Temperature Range	Operating: 50° to 95° F (10° to 35° C)* Non-operating: -22° to 140° F(-30° to 60° C)
Relative Humidity	Operating: 10% to 90% (non-condensing at ambient) Non-operating: 5% to 95% (non-condensing at ambient)
Maximum Altitude (unpressurized)	Operating: 10,000 ft (3048 m) Non-operating: 30,000 ft (9144 m)

*NOTE: Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.

System Board

Socket LGA775 industry standard Micro ATX form factor

Processor	• Socket T; LGA775 • Support single Intel Pentium 4 or Celeron D
PWM	• ON 3 phase power solution • Meets Intel Mainstream FMB spec
Chipset	• Intel 915GV Express • Intel ICH6
Super I/O	• ITE IT8712
Front Side Bus Frequency	• 533-/800-MHz
Memory	• PC2-4200 DDR2 SDRAM • 4 x DIMM slots • Slot 1 is black (and is Channel A) Slot 2 is white (and is Channel A) Slot 3 is black (and is Channel B) Slot 4 is white (and is Channel B) • Support for single or dual-channel configurations
Clock Generator	• ICS ICS954119 /Cypress CY28439 / Silego SLG84480
Integrated Graphics	• Intel Graphics Media Accelerator (GMA) 900
Audio	• Realtek ALC653 two channel audio 3D audio compliant with AC'97 rev. 2.3
LAN	• Intel 82562EZ 10/100 LAN
IDE	• Support all PIO modes • 1 x IDE ports support up to 2 devices • Support Ultra ATA 33/66/100
SATA	• Two Serial ATA interfaces support data transfer rates up to 1.5 Gb/s

System Details

	Expansion Slots	• 2 x PCI 2.3 slots • 1 x PCI Express x1 slot
	BIOS	• 4Mbit flash EEPROM • SST BIOS, PnP1.0A, ACPI, SMBIOS 2.4, Boot Block, DMI
	Manageability	• WfM 2.0, SMBus
	Industrial Standard	• PCI 2.3 compliant • USB 2.0
	Rear Side I/O Ports	• 1 x PS/2 keyboard port • 1 x PS/2 mouse port • 4 x USB 2.0 ports • 1 x RJ-45 10/100 port • 1 x serial port • 1 x parallel port • 1 x DB 15 pin analog VGA port • 3 x audio ports
	On Board I/O Interfaces	• 1 x ATX power connector • 1 x +12V power connector • 1 x Floppy connector • 1 x Front panel connector, Switch, LED (ON/Flash/OFF) • 2 x Fan headers for CPU, chassis, with voltage/fan speed control • 1 x ATAPI headers-CD IN • 1 x header to support 2 USB 2.0 ports at front side
	Board Size	• Micro-ATX, PCB Size: 9.6" X 9.0" • 4-layer PCB with green color
	Additional Features	• Bootable without keyboard, mouse or monitor • Keyboard/mouse/USB wake up • Support S1, S3, S4 and S5 • ACPI status • Hardware monitor capability • CPU fan speed control

		Integrated Intel PRO/100 Network Connection
Network Interface	Hardware Highlights	• 82562EZ Platform LAN Connect device • IEEE 802.3 10BASE-T compliant physical layer interface • IEEE 802.3u Auto-Negotiation and 100BASE-TX support • Digital adaptive equalization control • Link status interrupt capability • XOR Tree mode support for board testing • 3-port LED support (speed, link and activity) • 10BASE-T auto-polarity correction • Diagnostic loopback mode • 1:1 transmit transformer ratio support • Low power (300 mW) typical in active transmit mode • Reduced power(less than 50 mW) in "unplugged mode" • Automatic detection of "unplugged mode" • 3.3V device • Platform LAN connect interface support

System Details

Features	• 3-port LED support (speed, link, and activity) • ACPI support • Magic Packet filtering for Wake on LAN support • Automatic detection of "unplugged mode" • Low power (less than 300 mW in active transmit mode) • Platform LAN connect interface support • Low power 3.3 V device

Power Supply	• ATX Power Supply – Passive PFC/non-PFC with a 115v/230v line switch • Passive Power Factor Correction (PFC) – with line switch set to 230V – No PFC in 115V line switch position • 90 to 140VAC, or 180 to 264VAC operating voltage range • 100 to 127VAC, or 200 to 240VAC rated voltage range • 50-60 Hz rated line frequency • 47-63 Hz operating line frequency range • 250 watt maximum rated power • 80-mm power supply fan – variable speed for optimum acoustics

Power Conservation 'Energy Saver'	• Energy Star compliant • APM 1.2 support • Screen blanking • Hard drive 'Idle' mode • System Idle mode • Blue Angel compliant (<5w in S5 – power off) • ~2 watt power consumption in ES mode – suspend to RAM (S3) (instantly available PC) • Processor/Cache memory power-down (S3)

System Environmental Specs

- Values are subject to change without notification and are for reference only.
- Performance of system, options, and ancillary equipment will vary depending on the system configuration.
- Levels presented do not account for non-HP/Compaq installed hardware.

Ambient Air Temperature	Operating	50° to 95°F (10° to 35°C) at sea level with an altitude de-rating of 1.0°C per every 1000 ft (300 m) above sea level to a maximum of 8000 ft (2500 m), no direct sustained sunlight. Maximum rate of change is 77°F/Hr (25°C/Hr). The upper limit may be limited by the type and number of options installed.
	Storage	-22° to 140°F (-30° to 60°C) – Maximum rate of change: 410°F/Hr (210°C/Hr).
Humidity	Operating	10% to 90% relative humidity (Rh), 86°F (30°C) maximum wet bulb temperature, non-condensing
	Storage	10% to 95% relative humidity (Rh), 101.66°F (38.7°C) maximum wet bulb temperature, non-condensing

System Details

Altitude	Operating	0 to 8,000 feet (0 to 2438.4 meters) – This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1,000 ft/min (304.8 m/min).
	Non-Operating	0 to 30,000 feet (0 to 9,144 meters) – Maximum allowable altitude change rate is 1200 ft/min (365.76 m/min).
Shock	Listed are the levels of shock the product can withstand with NO damage being incurred. The values represent peak input acceleration during an 2~3 ms half-sine shock pulse, 11 ms trapezoidal shock pulse.	
	Non-Operating	35G's (Half-sine Shock) 35G's (Trapezoidal Shock)
Vibration	Listed are the levels of vibration the product can withstand with NO damage being incurred. The values represent a flat random vibration input acceleration profile across the given frequency range.	
	Operating	Random vibration at 5Hz@0.00025G^2/Hz, 10Hz@0.01G^2/Hz, 100Hz@0.01G^2/Hz, 300Hz@0.00001G^2/Hz 5Hz to 300Hz, (0.25G's nominal).
	Non-Operating	Random vibration at 0.008G^2/Hz, 10Hz to 500Hz, (2 Grms nominal).
Acoustic Noise	Listed are the declared A-WEIGHTED SOUND POWER LEVELS (LWAd) and declared average desktop seated operator position A-WEIGHTED SOUND PRESSURE LEVELS (LpAm) when the product is operating in a 73.4°F (23°C) ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
	IDLE (Fixed disk drive spinning)	LWAd = 4.3 Bels, Desktop Average LpAm = 32 dBA
	FIXED DISK (Random write)	LWAd = 4.8 Bels, Desktop Average LpAm = 37dBA
	CD-ROM (Sequential Reads)	LWAd = 5.0 Bels, Deskside Average LpAm = 39dBA

Service and Support

On-site Warranty[Note 1]: One-year (1-1-1) limited warranty delivers one year of on-site, next business-day[Note 2] service for parts and labor and includes free telephone support[Note 3] 24 x 7. Global coverage[Note 2] ensures that any product purchased in one country and transferred to another non-restricted country will remain fully covered under the original warranty and service offering. One-year onsite and labor are not available in all all countries. Additional configurable warranty options (sold separately) include: 90 days parts (90/0/0), three years parts and one year labor (3/1/1), or 3 years next business day, three years parts and three years labor (3/3/3).

NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply.

NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.

NOTE 3: Technical telephone support applies only to HP-configured Compaq and third-party HP-qualified hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

After-Market Options

Communications	**Wireless Network Interface Cards**	
	Wireless A+G PCI Adapter – Americas	EA118AA
	Wireless A+G PCI Adapter – WW except Americas	PZ928AA
	HP BT450 USB Bluetooth Wireless Printer and PC Adapter	IPQ639A
	Network Interface Cards	
	Broadcom NetXtreme Gigabit Ethernet PCIe x1 Adapter	EA833AA
	Intel PRO/1000 MT Gigabit Ethernet PCI Adapter	DC193A
	Intel PRO/1000 PT Gigabit Ethernet PCIe x1 Adapter	EH352AA
	Modems	
	Agere PCI Hi-Speed 56K International SoftModem	DC132D
Hard Disk Drives	250-GB SATA 3.0-Gb/s Hard Drive	PY278AA
	160-GB SATA 3.0-Gb/s Hard Drive	PY277AA
	80-GB SATA 3.0-Gb/s Hard Drive	PY276AA
Removable Storage Devices	**Diskette Drive**	
	1.44-MB Internal Diskette Drive for dx2100 (5.25" Bay)	AG111AA
	1.44-MB USB Diskette Drive – External	DC141B
	USB Drive Key	
	512-MB HP Drive Key II (USB 2.0)	ED516AA
	256-MB HP Drive Key II (USB 2.0)	PH657A
Input Devices	**Keyboards**	
	HP PS/2 Standard Keyboard	DT527A
	HP USB Standard Keyboard	DT528A
	Mice	
	HP PS/2 2-Button Scroll Mouse	DD440B
	HP USB 2-Button Scroll Mouse	DD441B
	HP USB 2-Button Optical Scroll Mouse	DC172B
Memory	1-GB PC2-4200 (DDR2-533) DIMM	PV557AA
	512-MB PC2-4200 (DDR2-533) DIMM	PV560AA
	256-MB PC2-4200 (DDR2-533) DIMM	PV558AA
Audio	HP Satellite Speakers	ZD929AA

After-Market Options

Optical Drives	48X Max CD-ROM Drive	DC143B
	52X Max CD-ROM Drive (available in Asia Pacific and Japan only)	AG041AA
	48X/32X/48X CD-RW Drive	DL975B
	48X/32X Combo Drive CD-RW / DVD-ROM Drive	DL976B
	16X/48X DVD-ROM Drive	PR596A
	16X DVD+/-RW LightScribe Drive (Double Layer/Dual Format)	PR595A
Miscellaneous Accessories	Adaptec FireConnect 2100 FireWire (1394) PCI Card	PA997A
Monitors	HP L1506 Flat Panel Monitor (15" analog only)	PX848AA
	HP L1706 Flat Panel Monitor (17" analog only)	PX849AA
	HP L1906 Flat Panel Monitor (19" analog only)	PX850AA
	HP L1740 Flat Panel Monitor (17" analog only)	PL766AA
	HP L1940 Flat Panel Monitor (19" analog only)	PF803AA
	HP L1955 Flat Panel Monitor (19" analog only)	PH466AA
	HP L2035 Flat Panel Monitor 20" analog only)	P9614A
	HP L2335 Flat Panel Monitor (23" analog only)	P9615A

Memory

915GV Express chipset

DDR2 SYNCH DRAM NON-ECC MEMORY

The Intel 915GV Express chipset supports non-ECC DDR2 PC2-4200 (533-MHz) memory. Memory upgrades are accomplished by adding single or multiple DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations.

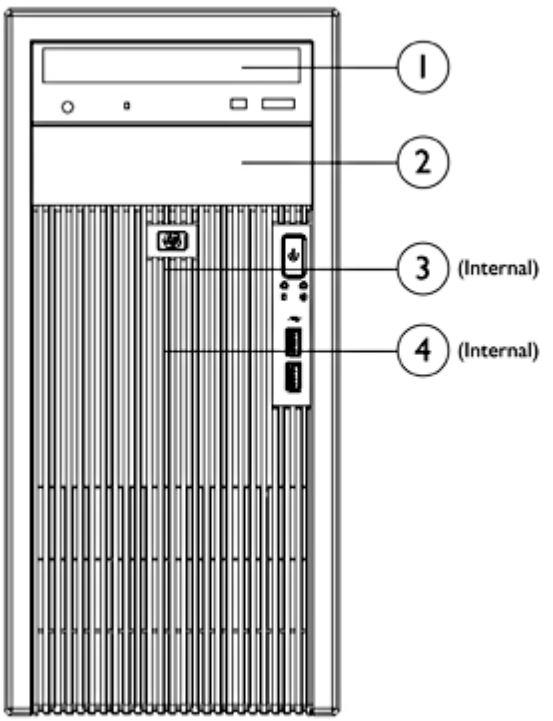
HP recommends dual-channel symmetric configurations for maximum performance. For best performance, add the same amount of total memory to each channel and do not mix speeds. For dual-channel symmetric performance, the total amount of memory in each channel must be equal. If speeds are mixed, speed will default to the slowest DIMM.

MAXIMUM MEMORY

Supports up to 4-GB of DDR2 SYNCH DRAM. *Above 3-GB, all memory may not be available due to system resource requirements. Not all memory configurations possible are represented below.*

DIMM Size	Slot			
	Channel A		Channel B	
	1 (black)	2 (white)	3 (black)	4 (white)
256-MB	256-MB			
512-MB	512-MB			
512-MB (dual-channel symmetric)	256-MB		256-MB	
1-GB	1-GB			
1-GB (dual-channel symmetric)	512-MB		512-MB	
1-GB (dual-channel symmetric)	256-MB	256-MB	512-MB	
2-GB (dual-channel symmetric)	1-GB		1-GB	
2-GB (dual-channel symmetric)	1-GB		512-MB	512-MB
4-GB maximum (dual-channel symmetric)	1-GB	1-GB	1-GB	1-GB

Storage



HP Compaq dx2100 Microtower Business PC

	Maximum Quantity Supported	Position Supported	Controller
Drive Support			
Diskette Drives	1	1, 2	ICH6
CD-ROM Drives	2	1, 2	IDE ATAPI
DVD-ROM Drives	2	1, 2	IDE ATAPI
CD-RW/Combo Drives	2	1, 2	IDE ATAPI
DVD+/-RW Drives	2	1, 2	IDE ATAPI
3.5" Serial ATA Hard Drives	2	3,4	SATA

Technical Specifications - Audio

Integrated Realtek ALC653 Audio	Type	Integrated
	AC '97 Stereo Codec	Yes
	Sampling	Supports 48 KHz
	Audio Jacks	Mic-In
		Line-In
		Line-Out
	Power Support	Digital: 3.3V
		Analog: 5V
	Other	Meets performance requirements for audio on PC99/2001 systems High quality differential CD input

Agere 56K PCI Modem	Data Transmission	56,000 Kbps maximum downstream data NOTE: 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions.
	Data Speeds	(Upload only) 33,600/31,200/28,800/26,400/21,600/19,200/16,800/14,400/12,000/9,600/7,200/4,800/2,400/1,200/300
	Data Standards	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
	Fax Speeds	14,400/12,000/9,600/7,200/4,800/2,400/300 b/s
	Fax Mode Capabilities	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
	Error Correction and Data Compression	V.44, 42bis, V.42 and MNP2-5
	Power Management	ACPI; PPMI 1.1 and wake support with PME and Vaux; meets PCI 2.3 requirements and PC 2001 requirements
	Upgradeability	Driver upgradeable for future enhancements
	Video	ITU-T V.80 video ready interface
	Other	TIA/EIA 602 standard AT command set Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface Optional ring wakeup signal
	Operating Temperature	32° to 158° F (0° to 70° C)
	Operating Humidity	20% to 90%, non-condensing
	Operating System Support	Microsoft Windows 2000 and Microsoft Windows XP
	OS Driver Support	Microsoft Windows 2000 and Microsoft Windows XP
	Power	Requires a 3.3-V auxiliary power rail on PCI bus Uses only one PCI load (i.e., one grant/request pair), one shared IRQ, one electrical load
	Chipset	Agere Systems SV92PL – Integrated PCI interface with 5-V tolerant buffers and CardBus support
	Dimensions (L X H)	Complies with PCI low profile specifications-6.7 x 2.3 in (17.0 x 5.8 cm) and supports high- and low-profile brackets
	Connection	Single RJ-11 connector
	Other Features	Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PnP ID support
	Safety	UL recognized to UL 1950, 3rd edition (U.S. and Canada); IEC 950 (TUV, NEMKO, DEMKO, SEMKO); CE Mark, EC 950 (TUV, NEMKO, DEMKO, SEMKO, CE mark
	EMC	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
	Telecom	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals Not available in Korea or the Republic of South Africa.
	Health	Bare PCB material compliant to 94V-0 or better (marked as such)
	Other	PC 2001 compliant, PCI version 2.3, WHQL approved; ACPI compliant

Kit Contents	DC132D : Agere Systems PCI International Softmodem with full-height bracket attached, additional low-profile bracket, RJ11 modem cable, driver and documentation CD. NOTE: RJ11 modem adapter is not included. DC131C #xxx: RJ11 modem adapter kit for use with DC132D #ACP: Austria, #ABW: Belgium (Dutch/Flemish), #AKN: Bosnia, Herzegovna, Croatia, Slovenia, Yugoslavia (Slovenian), #AKB: Czech Republic (Czech) & Slovakia, #ABF: France, #ABD: Germany, #AB7: Greece, #AKC: Hungary, #ABT: Israel, #ABZ: Italy, #ABH: Netherlands, #UUW: Nordic Region, #ACB: Russia, #ACQ: South Africa, #ACD: Switzerland, #AB8: Turkey, #ABU: UK, #ABG: Australia, New Zealand, #ACJ: India.	

Integrated Intel PRO/100 Network Connection	Manufacturer	Intel	
	Interface	Intel SingleDriver technology (10/100-Mbps support)	
	Connector	RJ-45	
	Expansion bus architecture	PCI 2.2	
	Configuration	Network transfer rate	10BASE-T (Half-Duplex) 10 Mbps 10BASE-T (Full-Duplex) 20 Mbps 100BASE-TX (Half-Duplex) 100 Mbps 100BASE-TX (Full-Duplex) 200 Mbps
		Data interface	PCI, 32-bit bus mastering
		I/O address	Integrated connectivity with Intel I/O Controller Hub (ICH2)-based platforms
	OS driver support	Microsoft Windows XP	
	Software support	Instrumentation support for CIM/WBEM SNMP, DMI, PXE 2.0, Intel PROSet utility for installation and configuration, Alert on LAN Software Developer Kit and same code	
	Remote wakeup	PME through PCI 2.2, no cable required	
	Boot PROM support	Yes, Intel PRO/100 Boot Agent (PXE 2.0, RPL)	
	Special features	Digital adaptive equalization control, link status interrupt capability, boundary scan support, 3-port LED support (speed, link, activity), 10BASE-T auto polarity correction, diagnostic loopback mode, 1:1 transmit transformer ratio support, automatic detection of unplugged mode, remote monitoring (alerting)	
	Proactive alert technology	Alert on LAN (transmit functionality only)-requires Management Console software such as HP OpenView and Altiris, alert utilities for the management console, proxy client software, client configuration software	
	F12 BIOS support	Yes	
	Environmental requirements	Operating temperature	32° to 131° F (0° to 55° C)
		Operating humidity (non-condensing)	85% at 131° F (55° C)
		Altitude	10,000 feet (3,048 meters)
		Non-operating temperature	-40° to 158° F (-40° to +70° C)
		Altitude	5,000 feet (15,240 meters)
	Power	300 mW typical in active transmit mode; reduced power in unplugged mode (<50 mW); 3.3 V device	
	Power management	ACPI 1.0	

Technical Specifications - Communications

Flash package	48-pin Shrink Small Outline Package (SSOP)
Network management	PCI 2.2
LED indicators	Three-port support (speed, link, and activity)
Standards compliance	IEEE 802.2, IEEE 802.3 and IEEE 802.3u, (100-Mbps ethernet), SCO UnixWare OpenDesktop and OpenServer, PC'99

Broadcom NetXtreme Gigabit Ethernet PCI Express x1 Adapter

Connector		RJ-45
Controller		Broadcom 5751 PCI-Express LAN Controller
Memory		Integrated 96Kb frame buffer memory
Data rates supported		10/100/1000 Mbps
Compliance		IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
Bus architecture		PCI-E
Data path width		Single channel, PCI-E
Data transfer mode		Bus-master DMA
Hardware certifications		FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
Power requirement		3.1 watts @ +3.3V AUX supply with 5V tolerance
Boot ROM support		Yes
Network transfer mode		Full-duplex
		Half-duplex (not available for the 1000BASE-T transceiver)
Network transfer rate		10BASE-T (half-duplex) 10 Mbps
		10BASE-T (full-duplex) 20 Mbps
		100BASE-TX (half-duplex) 100 Mbps
		100BASE-TX (full-duplex) 200 Mbps
		1000BASE-T (full-duplex) 2000 Mbps
Environmental	Operating temperature	32° to 131°F (0° to 55° C)
	Operating humidity	85% at 131° F (55° C)
Dimensions		4.4 x 2.2 x 0.08 in (11.2 x 5.5 x 2 cm)
Operating system driver support		Microsoft Windows XP
Management capabilities		ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility
Alerting		N/A
Kit contents		Broadcom 5751, CD, Broadcom NetXtreme Gigabit Ethernet PCI-E Adapter, drivers, quick install guide, product warranty statement

Integrated Graphics Media Accelerator 900	3D/2D Controller	Microsoft® DirectX® 9 based with support for Pixel Shader 2.0, 4:1 anisotropic filtering, Gaussian texture filtering, shadow maps, volumetric textures, double-sided stencil buffers, and 4 pixel pipes.
	VGA Controller	Integrated
	Bus Type	PCI Express™ x16
	RAMDAC	Integrated, 400 MHz
	Memory	Graphics memory is shared with system memory. Graphics memory usage can vary from 8-128 MB depending on the amount of system memory installed and system load. 8 MB is pre-allocated for graphics use at system boot time. Additional memory is allocated for graphics using Intel's Dynamic Video Memory Technology (DVMT) to balance the optimum amount of memory between graphics and other system use. Memory < 256 MB: 8 MB pre-allocated (for DOS) + 24 MB DVMT : max frame buffer of 32 MB 256 MB <= Memory < 512 MB:8 MB pre-allocated + 56 MB DVMT: max frame buffer of 64 MB 512 MB <= Memory: 8 MB pre-allocated + 120 MB DVMT : max frame buffer of 128 MB
	Controller Clock Speed	333 MHz
	Overlay Planes	Single overlay support with 5x3 filtering
	Maximum Color Depth	32 bits/pixel
	Maximum Vertical Refresh Rate	85 Hz at up to 1920x1440, 75Hz at 2048x1536. Varies with mode and configuration. See table below.
	Multi-display Support	Support for one CRT via the motherboard's VGA connector. Dual independent displays and dual synchronous (Twin or Clone mode) displays are supported.
	Operating Systems	Microsoft Windows XP
	Graphics/Video API Support	Microsoft DirectX®9, DirectXVA®, VMR9, GDI/GDI+; OpenGL® 1.4.

Resolutions Supported[1]

Resolution	Maximum Refresh Rate (Hz)	
	Analog Monitor	Digital Monitor
640 x 480	85	70
800 x 600	85	70
1024 x 768	85	70
1152 x 864	85	70
1280 x768	60	70
1280 x 960	85	70
1280 x 1024	85	70
1600 x 900	60	70
1600 x 1200	85	60
1920 x 1080	60	-
1920 x 1200	60	-
1920 x 1440	75	-
2048 x 1536	75	-

[1] Modes listed are supported with a single active display. The supported mode list for multiple active displays is a subset of this list. Not all modes will support video playback and some supported modes may use software MC (motion compensation) rather than hardware MC. Not all modes will support 3D acceleration depending on the system configuration (e.g., resolution selected, size of frame buffer, number of installed memory modules, etc.).

NOTE: Other resolutions and refresh rates may be selectable but are not recommended.

HP PS/2 or USB Standard Keyboard	Physical characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
		Dimensions (L x W x H)	18.0 x 6.4 x 0.98 in (45.8 x 16.3 x 2.5 cm)
		Weight	2 lb (0.9 kg) minimum
	Electrical	Operating voltage	+ 5VDC ± 5%
		Power consumption	50-mA maximum (with three LEDs ON)
		ESD	CE level 4, 15-kV air discharge
		EMI - RFI	Conforms to FCC rules for a Class B computing device
		MicrosoftPC 99 - 2001	Functionally compliant
	Mechanical	Languages	38 available
		Keycaps	Low-profile design
		Switch actuation	55-g nominal peak force with tactile feedback
		Switch life	20 million keystrokes (using Hasco modified tester)
		Switch type	Contamination-resistant switch membrane
		Key-leveling mechanisms	For all double-wide and greater-length keys
		Cable length	6 ft (1.8 m)
		Microsoft PC 99 - 2001	Mechanically compliant
		Acoustics	43-dBA maximum sound pressure level
	Environmental	Operating temperature	50° to 122° F (10° to 50° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Operating humidity	10% to 90% (non-condensing at ambient)
		Non-operating humidity	20% to 80% (non-condensing at ambient)
		Operating shock	40 g, six surfaces
		Non-operating shock	80 g, six surfaces
		Operating vibration	2-g peak acceleration
		Non-operating vibration	4-g peak acceleration
		Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
		Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
	Operating system support	Microsoft Windows XP	
	Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
	Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

Technical Specifications - Input/Output Devices

HP 2-Button Scroll Mouse (PS/2 or USB)	Scroll Wheel	8 mm	
	Maximum Rotation Speed	30 mm/s	
	Switch Type	Light force micro-switch	
	Switch Life	1 million operations	
	Mechanical Life	Minimum 200,000 revolutions	
	Environmental	Operating Temperature	50° to 122° F (10° to 50° C)
		Non-operating Temperature	-22° to 140° F (-30° to 60° C)
		Operating Humidity	10% to 90% (non condensing at ambient)
		Non-operating Humidity	20% to 80% (non condensing at ambient)
		Operating Shock	40 g, 6 surfaces
		Non-operating Shock	80 g, 6 surfaces
		Operating Vibration	2 g peak acceleration
		Non-operating Vibration	4 g peak acceleration
	Electrical	Operating Voltage	+ 5VDC ± 10%
		Power Consumption	15mA
		System Consumption	PS/2 mini-din connector
		ESD	CE level 4, 15 kV air discharge
		EMI-RFI	Conforms to FCC rules for a Class B computing device
		PC98	Functionally compliant
	Mechanical	Resolution	400 ± 20% DPI
		Tracking Speed	10 in/s maximum
		Acceleration	100 in/s
		Switch Actuation	85 g nominal peak force
		Switch Life	1,000,000 operations (using Hasco modified tester)
		Cable Length	2 m
		PC98-99	Mechanically compliant
	Regulatory Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BCIQ, C-Tick	

Technical Specifications - Hard Drives

Serial ATA Hard Drives (7200 rpm)	40 GB	Capacity	40,020,664,320 bytes	
		Height	1 in (2.6 cm)	
		Width	Media diameter: 3.5 in (8.9.x cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA	
		Synchronous Transfer Rate (Maximum)	1.5 Gb/s	
		Buffer	2 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	Single Track	1.0 ms
			Average	8.5 ms
			Full-Stroke	18.0 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	78,165,360	
		Operating Temperature	32° to 140° F (0° to 60° C)	
	80 GB*	Capacity	80,026,361,856 bytes	
		Height	1 in (2.6 cm)	
		Width	Media diameter: 3.5 in (8.9.x cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA	
		Synchronous Transfer Rate (Maximum)	1.5 Gb/s	
		Buffer	8 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	Single Track	1.0 ms
			Average	8.5 ms
			Full-Stroke	18 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	156,301,488	
		Operating Temperature	32° to 140° F (0° to 60° C)	

Technical Specifications - Hard Drives

160 GB*	Capacity	160,041,885,696 bytes	
	Height	1 in (2.6 cm)	
	Width	Media diameter: 3.5 in (8.9.x cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA	
	Synchronous Transfer Rate (Maximum)	1.5 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	1.0 ms
		Average	8.5 ms
		Full-Stroke	18 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	32° to 140° F (0° to 60° C)	
250 GB*	Capacity	250,059,350,016 bytes	
	Height	1 in (2.6 cm)	
	Width	Media diameter: 3.5 in (8.9 cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA	
	Synchronous Transfer Rate (Maximum)	1.5 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	0.8 ms
		Average	<9.0 ms
		Full-Stroke	≤17 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	41° to 131°F (5° to 55°C)	

NOTE: Although this drive is rated for a 3.0-Gb/s transfer rate, the Serial ATA interfaces in the HP Compaq dx2100 Microtower support data transfer rates up to 1.5 Gb/s.

Technical Specifications - Optical Storage

48X CD-ROM Drive	Interface	ATAPI	
	Data Transfer Rate	Variable (Audio CD) - 1,800 to 3,600 KB/s (24X) Max	Variable (CD-ROM, CD-R)-2,400 to 7,200 KB/s (48x) Max
	Access Time (ms)	Random: <125 ms	Full-stroke seek: <210 ms
	Data Buffer	2MB	
	Disk Formats Read	CD-ROM Mode 1, CD-ROM XA (Mode 2, Form 1 and 2), CD Digital Audio, CD-EXTRA, CD-I (Mode 2, Form 1 and 2) and CD-I Ready, CD-Text, CD-Bridge, Photo CD (Single and Multi Session), Video CD, CD-R and CD-RW Multi-Session	
	Disk Formats Written	None	
	Disk Capacity (CD)	180MB, 540MB, 650 MB, and 700MB	
	Block Size	Mode 1-2,048, 2,352 bytes Mode 2-1, 2,048, 2,328, 2,336, 2,340, 2,353 bytes Mode 2-2, 2,328, 2,336, 2,340, 2,352 bytes CD-DA-2,352, 2,368 bytes	
	Diameter	12 cm; 8 cm	
	Thickness	1.2 mm	
	Track Pitch	1.6 μm	
	Audio Output Level	Line-out-0.7 V @ 47 Kohm	Headphone-0.6 V @ 32 ohm
	Startup Time	<7 seconds (typical); < 30 seconds with multi-session	
	Operating Conditions	Temperature	41° to 122° F (5° to 50° C)
		Relative Humidity	10% to 90%
	Dimensions (H x W x D, maximum)	1.7 x 5.9 x 8.0 in (4.3 x 15.0 x 20.3 cm)	
	Weight	2.6 lb (1200 g)	
	Operating Systems Supported	MicrosoftWindows XP	

48X/32X/48X CD-RW Drive	Orientation	Either horizontal or vertical
	Disc loading mechanism	Half-height, tray load
	Interface type	ATAPI IDE
	Dimensions-external (W x H x D)	7.99 x 5.88 x 1.71 in (20.3 x 14.93 x 4.34 cm)
	Weight	2.6 lb (1.2 kg)
	Disc diameter	12 cm, 8 cm
	Disc thickness	1.2 mm
	Track pitch	1.6 μm
	Disc center hole diameter	15 mm
	Reference scanning velocity	1.2 m/s
	Recording/playing time	80 minutes with CD-R media

Read only disc parameters	Formats and modes supported	CD-ROM-Mode 1; CD-ROM XA-Mode 2 (forms 1 and 2); CD digital audio; CD Extra; CD-I-Mode 2 (forms 1 and 2) and CD-I-Ready; Photo CD (single and multi-session); video CD
	Capacity	185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm)
	Block size	Mode 1-2,048 and 2,352 bytes; mode 2, form 1-2,048; 2,328; 2,336; 2,340 and 2,352 bytes; mode 2, form 2-2,328; 2,336; 2,340 and 2,352 bytes; CD-DA-2,352 and 2,368 bytes
Writeable disc parameters	Disc type	CD-R and CD-RW
	Write methods	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet
	Format and modes supported	CD-ROM (mode 1); CD-ROM XA (mode 2, forms 1 and 2); CD digital audio, CD-I (mode 2, forms 1 and 2); video CD
	Capacity	185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm)
	Block size	Mode 1-2,048 bytes; mode 2, form 1-2,048 and 2,352 bytes; mode 2, form 2-2,352 bytes; CD-DA ---2,352 bytes
Access times (typical)	Random	< 120 ms
	Full stroke	< 200 ms
Data transfer rates	CD-RW write	4800 KB/s (up to 32X)
	CD-ROM, CD-R read	7200 KB/s (up to 48X)
	CD-RW read	7200 KB/s (up to 32X)
	CD-R write	7200 KB/s (up to 48X)
Data transfer modes	ATA PIO mode 4 (16.7MB/s); ATA multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA mode 0 (16.7 MB/s); ATA UltraDMA mode 1 (24 MB/s); ATA UltraDMA mode 2 (33 MB/s) - default.	
Cache buffer	2 MB (minimum)	
Start-up time (single)	< 7 seconds typical	
Start-up time (multi-session)	< 30 seconds typical	
Stop time	< 4 seconds	

Technical Specifications - Optical Storage

Power	Source	Four-pin, DC power receptacle	
	DC power requirement	5 VDC 5%-100 mV ripple p-p	
		12 VDC 5%-200 mV ripple p-p	
	DC current	5 VCD	< 1A (typical)
			< 1600 mA (maximum)
		12 VCD	< 600 mA (typical)
			< 1.4A (maximum)
		Total Drive Power (Standby mode)	< 2.5 watt
Audio output level	0.7 Vrms		
Configuration jumper block	Master, slave and cable select modes		
Data interface connector	50-pin IDE interface		
Environmental (all conditions, non-condensing)	Temperature (operating)	41° to 122° F (5° to 50° C)	
	Relative Humidity (operating)	10% to 90%	
	Maximum Wet Bulb Temperature (operating)	84° F (29° C)	
Certifications, requirements	ACA AS/NZS 3548, ANSI C63.4-1992, CB Test Certificate for IEC 950, CE Mark, CFR 47 part 15, CNS 13438, CSA C22.2 No. 60950, DHHS/FDA - 1040, EN60825, EN55022:1998, EN55024, EN60 950:2000, ICES-003 class B, IEC 61000 4-2 - 4-11, Nordic EN60 950, TUV or VDE EN60 950, UL 60950, C.I.S.P.R. Publication 22 Class B, BSMI, Microsoft P2001, Microsoft Logo for Windows 98, 2000 and XP		
Operating systems supported	Microsoft Windows XP		

16X/48X DVD-ROM Drive	Height	5.25-in, half-height
	Interface Type	ATAPI
	Dimensions– External, Excluding Bezel (W x H)	5.88 x 1.71 in (149.5 x 43.5 mm)
	Disc Diameter	12 cm, 8 cm
	Disc Thickness	1.2 mm
	Track Pitch	1.6 μm (CD), 0.74 μm (DVD)
	Disc Center Hole Diameter	15 mm
	Disc Formats	DVD-ROM (single and dual layer); DVD-video; DVD-R version 1.0 and 2.0; DVD-RW version 1.0 and 1.1; DVD-R multi-border; DVD+RW; DVD+R, DVD+R DL ; CD-ROM Mode 1 and 2; CD-DA; CD-ROM XA Mode 2, Form 1 and 2; CD-extra; CD-text; CD-I Mode 2, Form 1 and 2; CD-I ready; video CD, CD-bridge; PhotoCD (single and multi-session); CD-R; CD-RW

Technical Specifications - Optical Storage

	Disc Capacity	DVD-ROM	4.7 GB (DVD-5), 8.54 GB (DVD-9), 9.4 GB (DVD-10), 3.95 GB (DVD-R version 1.0), 4.7 GB (DVD-R version 2.0), 4.7 GB (DVD-RW version 1.0 and 1.1), 4.7 GB (DVD+RW), 4.7G (DVD+R), 8.5 GB (DVD+R DL)
		CD-ROM	540 MB (Mode 1, 12 cm), 640 MB (Mode 2, 12 cm), 700 MB (80 minimum CD-R and CD-RW), 180 MB (8 cm)
	Block Size (bytes)	DVD-ROM - 2048; CD-ROM Mode 0 - 2352; CD-ROM Mode 1 - 2352, 2340, 2336, 2048; CD-ROM Mode 2 - 2352, 2340, 2336, 2048	
	Access Times (typical reads, including settling)	DVD-ROM Single Layer	120 ms (typical)
		CD-ROM Mode 1	90 ms (typical)
		Full Stroke DVD	240 ms (seek) (typical)
		Full Stroke CD	160 ms (seek) (typical)
	Maximum Data Transfer Rates	CD-ROM Read	7200 KB/s (up to 48X)
		DVD-ROM Read	21,600 KB/s (16X) Max
	Data Transfer Modes	PIO Mode 4 (16.6 MB/s); Multi-word DMA mode 2 (16.6 MB/s); UltraDMA Mode 3 (44.4 MB/s)	
	Power	Source	Four-pin, DC power receptacle
		DC Power Requirement	5 VDC ± 5% – 100 mV ripple p-p
			12 VDC ± 5% – 200 mV ripple p-p
		DC Current	5 VDC – <800 mA typical, < 1000 mA maximum
			12 VDC – < 870 mA typical
	Audio Output Level	0.7 Vrms (typical)	
	Configuration Jumper Block	Master, slave, and cable select modes	
	Data Interface Connector	40-pin, shrouded and keyed, flat ribbon	
	Environmental (all conditions non-condensing)	Temperature (operating)	41° to 122° F (5° to 50° C)
		Relative Humidity (operating)	10% to 85%
		Maximum Wet Bulb Temperature (operating)	86° F (30° C)
	Certifications, Approvals	MMC II support, multi-read certification, Microsoft WHQL certification, ACA AS/NZS 3548 class B, CNS 13438, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, SEMKO, NEMKO, DEMKO, FIMKO, EN 60825-1, UL 60950, and CSA C22.2 60950-2000.	
	Operating systems supported	Microsoft Windows XP	
48X Combo CD-RW/ DVD-ROM	Form Factor	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	ATAPI	
	Dimensions (W x H x D)	5.77 x 1.71 x 7.36 in (14.66 x 4.34 x 18.69 cm) (external, excluding bezel)	
	Disc diameter	12 cm, 8 cm	
	Disc thickness	0.05 in (1.2 mm)	

Track pitch	1.6 um (CD), 0.74 um (DVD)	
Disc center hole diameter	0.6 in (15 mm)	
Reference scanning velocity	1.2 m/s (CD); 3.49 m/s (DVD SL); 3.84 m/s (DVD DL)	
Read only disc parameters	Formats and modes supported	CD-ROM-Mode 1; CD-ROM XA-Mode 2; CD-Bridge; CD digital audio; CD Extra; Photo CD (single and multi-session); video CD; DVD (single- and double-layer); DVD-R; DVD-RW; DVD-RW Multi-Border; DVD+R; DVD+R Multi-Session , and DVD+RW
	Capacity	180 MB (8 cm); 540 MB (12 cm); 650 MB (12 cm); 700 MB (12 cm); 4.7 GB (DVD-5); 8.54 GB (DVD-9); 9.4 GB (DVD-10)
	Block size	Mode 1-2,048 and 2,352 bytes; mode 2, form 1-2,048; 2,328; 2,336; 2,340 and 2,352 bytes; mode 2, form 2-2,328; 2,336; 2,340 and 2,352 bytes; CD-DA-2,352 bytes; DVD-2,048 bytes
Writeable disc parameters	Disc type	CD-R and CD-RW
	Write methods	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet
	Format and modes supported	CD-ROM; CD-ROM XA; CD digital audio, video CD; CD-Bridge
	Capacity	180 MB (8 cm); 540 MB (12 cm); 650 MB (12 cm); 700 MB (12 cm)
	Block size	CD-DA-2,352 bytes; mode 0- 2,336 and 2,352 bytes; mode 1-2,048 and 2,352 bytes; mode 2-2,336 and 2,352; mode 2, form 1-2,048 and 2,352 bytes; mode 2, form 2-2,324 and 2,352 bytes
Access times (typical reads, including settling)	Random DVD	< 140 ms (typical)
	Random CD	< 125 ms, (typical)
	Full stroke DVD	< 250 ms (seek)
	Full stroke CD	< 210 ms (seek)
Data transfer rates	CD-R write	7200 KB/s (up to 48X)
	CD-RW write	4800 KB/s (up to 32X)
	CD-ROM, CD-R, CD-RW read	7200 KB/s (up to 48X)
	DVD ROM read	21,632 KB/s (16X) Max
Data transfer modes	ATA PIO mode 4); ATA Multi-word DMA mode 2; ATA UltraDMA mode 0; ATA UltraDMA mode 1, mode 2; ATA UltraDMA Mode 3 (default)	
	Cache buffer	2 MB (minimum)
	Startup time (single)	< 7 seconds (typical)
	Startup time (multi-session)	< 30 seconds (typical)
	Stop time	< 4 seconds

Technical Specifications - Optical Storage

	Power	**Source**	Four-pin, DC power receptacle
		DC power requirement	5 VDC ± 5%-100 mV ripple p-p
			12 VDC ± 5%-200 mV ripple p-p
		DC current	5 VDC (< 1000 mA typical, < 1600 mA maximum)
			12 VDC (< 600 mA typical, < 1400 mA maximum)
		Total drive power (standby mode)	< 2.5 Watt
	Audio output level	0.7 Vrms (typical)	
	Configuration jumper block	Cable select (default), master and slave modes	
	Data interface connector	40-pin, shrouded and keyed, flat ribbon	
	Environmental (all conditions non-condensing)	**Temperature** (operating)	41° to 122° F (5° to 50° C)
		Relative humidity (operating)	10% to 90%
		Maximum wet bulb temperature (operating)	86° F (30° C)
	Certifications, requirements	MPC-3 compliant, multi-read requirements, ACA AS/NZS 3548, ANSI C63.4-1992, ATAPI Spec SFF-8020, ATA Spec X3T9.2, CB Bulletin No. 92A, CSA C22.2 No. 950-1995, C.I.S.P.R. Pub 22, EMKO-TSE 207/94, TUV or VDE EN60 950, EN60825-1, Microsoft PC2001 certification, Microsoft Logo for Windows XP, 2000	
	Operating systems supported	Microsoft Windows XP Professional, Windows XP Home	
16X DVD+/-RW LightScribe Drive (Double Layer/Dual Format)	5.25-inch, half-height, tray-load		
	Orientation	Either horizontal or vertical	
	Interface type	ATAPI/EIDE	
	Disc recording capacity	8.5 GB DL or 4.7 GB standard	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	2.6 lb (1.2 kg)	
	Write speed	DVD+R	Up to 16X
		DVD+RW	Up to 4X
		DVD+R DL	Up to 2.4X
		DVD-R	Up to 8X
		DVD-RW	Up to 4X
		CD-R	Up to 40X
		CD-RW	Up to 24X
	Read speed	DVD+R/-R/+RW/ -RW/+R DL	Up to 8X
		DVD-ROM	Up to 16X
		CD-ROM, CD-R	Up to 40X
		CD-RW	Up to 32X

Technical Specifications - Optical Storage

Access time (typical reads, including settling)	Random	DVD: < 130 ms (typical), CD: < 120 ms (typical)
	Full Stroke	DVD: < 240 ms (seek), CD: < 200 ms (seek)
	Startup Time	Single-session: < 15 seconds (typical), Multi-session: < 30 seconds (typical)
	Stop Time	< 4 seconds
	Cache Buffer	2 MB (minimum)
	Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default)
Power	Source	Four-pin, DC power receptacle
	DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
		12 VDC ± 5%-200 mV ripple p-p
	DC Current	5 VDC (< 1000 mA typical, 1600 mA maximum)
		12 VDC (< 600 mA typical, 1400 mA maximum)
	Total Drive Power (standby mode)	< 2.5 Watt
Audio output	Line-Out	0.7 VRMS
	Signal-to-Noise Ratio	74 dB
	Channel Separation	65 dB
Environmental conditions (operating - non-condensing)	Temperature	41° to 122° F (5° to 50° C)
	Relative humidity	10% to 90%
	Maximum wet bulb temperature	86° F (30° C)
Operating systems support	Microsoft Windows XP Professional, Windows XP Home	
Regulatory approvals	MPC-3 compliant, multi-read requirements, ATA Spec X3T9.2, ATAPI Spec T13.1153D, ANSI C63.4-1992, UL 1950, ACA AS/NZS 3548, CB Bulletin No. 96A, CSA C22.2 No. 950-1995, CFR 47 C.I.S.P.R. Pub 22 Class B, DHHS/FDA, EMKO-TSE 07/94, TUV EN60950, EN60825-1, MIC, BSMI-CNS 13438, CE, Microsoft PC2001 certification, Microsoft Logo for Windows XP and 2000.	

1.44-MB Diskette Drive	Size	3.5 in (8.89 cm)	
	LED Indicators (front panel)	Green	
	Read/Write Capacity per Diskette (high/low)	1.44 MB/720 KB	
	Drive Height	One-third	
	Drive Rotation	300 rpm	
	Transfer Rate (high/low)	500/250 KB/s	
	Bytes/Sector	512	
	Sectors/Track (high/low)	18/9	
	Tracks/Side (high/low)	80/80	
	Access Times	Track-to-Track (high/low)	3/6 ms
		Average (high/low)	94/173 ms
		Settling Time	15 ms
		Latency Average	100 ms
	Cylinders (high/low)	80/80	
	Read/Write Heads	Two	

Environmental Data

Eco-Label Certifications & declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US Energy Star
- Blue Angel
- US Federal Energy Management Program (FEMP)
- Taiwan Green Mark
- IT ECO declaration

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model included:

Processor	Intel Pentium 4 630 Processor (3.0-GHz, 2-MB L2 cache, 800-MHz FSB)
Memory	256-MB DDR2 Synch Dram PC2-4200 (533-MHz)
Hard Drive	40-GB SATA 1.5-Gb/s (7200 rpm)
Optical Drive	16X/48X DVD-ROM
Network	Broadcom NetXtreme Gigabit Ethernet PCI Express x1 Adapter

Ultra-Slim Desktop, Small Form Factor, Convertible Minitower

Energy Consumption

	115VDC	230VDC	100VDC
Normal Operation	63 W	62 W	62 W
Sleep	2.9 W	2.8 W	2.7 W
Off	1.7 W	1.8 W	1.6 W

Heat Dissipation*

	115VDC	230VDC	100VDC
Normal Operation	216 BTU/hr	212 BTU/hr	212 BTU/hr
Sleep	10 BTU/hr	10 BTU/hr	10 BTU/hr
Off	6 BTU/hr	7 BTU/hr	6 BTU/hr

*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

This product is in compliance with US executive order 13221, WOL (wake on LAN) disabled.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

	Sound Power (LWad, bels)	Deskside Sound Pressure (LpAm, decibels)
Idle	3.47	25.8
Fixed Disk (random writes)	4.06	34.1
Optical Drive (sequential reads)	4.59	39.8

Longevity and Upgrading

This product is designed to be upgraded, possibly extending its useful life by several years. Spare parts are available throughout the warranty period and for up to 15 months after the end of production. Upgradeability features contained in the product include:

- 6 USB ports
- 2 external 5.25" drive bays
- 2 internal 3.5" drive bays
- 2 empty standard PCI slots
- 1 empty standard PCI-EX1 slot
- 4 memory slots
- 1 Serial port
- 1 Parallel port

Batteries

This product complies with ISO standards:

- EU Directive 91/ 157/ EEC
- EU Directive 93/ 86/ EEC
- EU Directive 98/ 101/ EEC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000ppm by weight.

Battery size: CR2032 (coin cell)
Battery type: Lithium

Additional Information

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 75% recycled materials (by wt.)

This product is 75% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
  - Corrugated Paper 1840 g
- Internal:
  - LDPE Foam 280 g
  - LDPE Bag 50 g

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: [link to new HP white paper now in progress] Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

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